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**Pro-Fluoridation Efforts in a Changing Environment: Proactive and
Reactive Tactics by State Coalitions**

Honors Thesis

Presented in Partial Fulfillment of the Requirements

**For the Degree of Bachelor of Science
In the College of Arts and Sciences
at Salem State University**

By

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The Honors Program
Salem State University
2016

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I. Introduction

The year 2015 marked the 70th anniversary of community water fluoridation in the United States. In 1945, Grand Rapids, Michigan was the first city in the world to fluoridate their community water supply under the sponsorship of the U.S. Surgeon General. In 1999, the Centers for Disease Control and Prevention named community fluoridation one of the “top 10 public health achievements of the 20th century,” where it stands alongside other controversial public health achievements such as vaccinations and the recognition of tobacco as a health hazard (CDC 1999). In 2012, the CDC reported 74.6% of the U.S. population received fluoridated water from community water supplies (CDC 2013). Children born after the addition of fluoride to water had 60% less tooth decay (NIH 2014).

Controversy around fluoridation first emerged in 1950 when Stevens Point, Wisconsin voted to discontinue fluoridation of the public water supply, inciting debates in other communities. Opposition to fluoridation in the 1950s was primarily based on the perception of it as mass medication intruding on individual rights to choose (Leahy and Mazur 1978). Concern originated during a time of fear – fear of socialism and communism, fear for the loss of individual liberties, and questions around the impact of trace ‘poisons’ – such as fluoridation – on the environment (Leahy and Mazur 1978). Opposition efforts continued through 1952, followed by a drop in anti-fluoridation activity due to the defeat of a series of ballot measures. A similar pattern occurred in 1964 and 1972 with peaks in anti-fluoridation activity, followed by stagnation due to defeat (Leahy and Mazur 1978).

The Fluoride Action Network (FAN), a project of the non-profit organization, American Environmental Health Studies Project (AEHSP), leads the national fluoridation opposition movement. The executive director of the Fluoride Action Network, Paul Connett,

began the organization in 2000, incorporating as a project of AEHSP in 2004. Their goal is to increase awareness about “the toxicity of fluoride compounds among citizens, scientists, and policymakers...FAN...remains vigilant in monitoring government agency actions” that impact fluoride exposure for the public” (FAN 2016). The employees and advisory board of FAN come from a variety of countries and organizations centered on research, environmental issues and policy, such as the Consumer’s Association of Penang, Malaysia, and the Department of Human Anatomy and Cell Biology at the University of Liverpool, UK.

In response to attacks on fluoridation, the pro-fluoride network formalized national networks and deployed resources across the country starting in 2000. The DentaQuest Foundation, established in 2000, focuses on funding efforts improve oral health throughout the country. A Community Water Fluoridation Initiative was launched in response to a “growing number of communities” that are voting on community water fluoridation programs, and reverse “a generation of improvements to America’s oral health” (DentaQuest Foundation 2013). Funding focused on community water fluoridation has been granted to national and statewide agencies and organizations including PEW Charitable Trusts, Health Resources in Action, Upstream Public Health, and the West Virginia Department of Health and Human Resources.

Health Resources in Action (HRiA), an advocacy organization aimed at attaining health equity and a grantee of the DentaQuest Foundation, has utilized DentaQuest funding to assist communities interested in fluoridating their community water supplies to garner support from their communities. A direct result of their efforts is the DentaQuest Fluoridation Toolkit, published in 2015, which walks through the steps necessary to

fluoridate a community, including gaining support of local politicians and community leaders, and developing messages around fluoridation focusing on community values. The American Fluoridation Society formed in 2014 in order to provide an organized group of people who can do the groundwork on community water fluoridation campaigns, attending city and town meetings, and promoting fluoridation in local communities (DentistryIQ Editors 2016). In October 2015 the National Governor's Association (NGA) joined the lengthy list of national, state and local organizations supporting community water fluoridation. (NGA 2015).

In the year 2000 ballot measures appeared in 26 cities in the United States, spurred by a wide range of activity, from fluoride opposition attempting to discontinue fluoridation to fluoride support looking to implement community water fluoridation (Freeze and Lehr 2009). In addition to this series of ballot measures, 11 communities voted on whether to implement or continue fluoridation through administrative action. The success rate of fluoridation showed to be far greater when it was voted on by administrative action rather than referendum. A significant number of states attempted to pass state mandates for fluoridation, particularly in communities above a certain population level. These efforts resulted in some successes, with twelve states approving mandates. Since 2000, 42 million more Americans now have access to fluoridated public water supplies (Campaign for Dental Health 2013).

While the number of public water supplies fluoridating has increased, there is still an active anti-fluoride movement. Over the past 15 years, every state in the country has seen a vote on whether to fluoridate or continue fluoridating, with the exception of Rhode Island, South Dakota and Nevada (ADA 2014). These votes have come on different levels of

state and local government – public referenda, city council votes, statewide initiatives, water authority boards, and other such bodies with the authority to influence state and local fluoridation practices. Even within states that have not seen votes in the past fifteen years, there has been opposition activity. In 2013 in Minnesota and South Dakota, bills were introduced in the State Senate to repeal the municipal water fluoridation requirement. Using agnotology, the theory of the social construction of ignorance, this paper seeks to understand current strategies used for and against community water fluoridation through the analysis of state oral health coalition’s activities and the activities of anti-fluoridationists they are observing in the ongoing fluoride debate.

II. Theoretical Framework

Agnotology is the cultural production of ignorance and its study (Proctor and Schiebinger 2008). Whether constructed actively, strategically or perpetuated through misinformation, agnotology is present in regard to a number of different subjects. Agnotology has been used as a framework to study fights around issues including vaccinations, climate change and tobacco. Ignorance “has a distinct and changing political geography that is often an excellent indicator of the politics of knowledge” (Proctor and Schiebinger 2008).

Agnotology considers the impact of agents, the general public’s response to science, and media influence on the social construction of ignorance. One aspect of this construction of ignorance holds that ignorance is “constructed, imposed, and manipulated by agents” (Proctor and Schiebinger 2008). The theory considers how agents, or those groups and individuals taking action to produce a desired effect, manufacture ignorance and doubt in an effort to maintain their interests, whether that profits tobacco sales or media.

A second component on the social construction of ignorance examines how people respond to ignorance (Proctor and Schiebinger 2008). Confirmation bias asserts that in the face of uncertainty, people selectively obtain information supporting a position they have, while neglecting to obtain information on the opposing side (Proctor and Schiebinger 2008). Consciously or unconsciously, this process validates individuals' beliefs in their own opinions, regardless of opposing evidence. Many of these individuals find results that consist of junk science, rather than sound science that would provide them well-researched, in-depth analysis around the issue of their concern. Personal and cultural values are significant determinants in peoples' positions on fluoridation. Fluoridation – along with vaccinations – is an issue that “teeters on the delicate cusp of prevention, public policy, and personal choice” (Seymour 2015).

Controversies regarding science often reflect “broader tensions” in society, displaying conflict between beliefs in “individual autonomy and community goals” (Nelkin 1992). The general idea of science is that its discoveries and progress can provide certainty; however, when people hold uncertainty due to their values or previously held ideas, the assumption is made that the science cannot be complete (Oreskes and Conway 2010). Bad science usually can be found in “one of two forms: either outright fraud or self-delusion” (Freeze and Lehr 2009). Fraud consists of falsified evidence and data, while self-delusion is the “confusion of hopes and facts,” resulting from a scientist's desire to see their beliefs come to fruition (Freeze and Lehr 2009). The terms “junk science” and “sound science” have “stuck and continue to polarize the debates on many public health policy issues” (Samet and Burke 2001). People who see information challenging their confirmation bias may view it immediately as invalid, labeling it as “junk science” in

retaliation toward the unknown. In questioning scientific evidence utilized to create public health policies, opponents “manufacture uncertainty” and “ridicule research” (Michaels and Monforton 2005).

Agnotology also focuses on the role of media in the manufacture of uncertainty among the general population. A mass publicized claim that ignorance exists around a certain topic coming from well-respected actors – such as nationally regarded news sources, politicians, community leaders, etc. – invokes feelings of doubt (Stocking and Holstein 2008). An example is the campaign to manufacture doubt around the effects of tobacco smoke. The media was releasing “antismoking” studies and articles, which led to a decrease in cigarette sales (Stocking and Holstein 1993). In response, tobacco companies funded research and a public relations strategy that claimed a lack of consensus and sufficient science around the impact of tobacco on the public. This enabled tobacco companies to maintain an upper hand against the science against their product (Oreskes and Conway 2010).

Though journalists have the responsibility to create a balance in the news they report, and relay an “accurate representation of reality,” they also have a responsibility to engage audiences who may not have an interest in or any knowledge of science (Stocking and Holstein 1993). Journalistic reporting often can provide well-documented information that avoids ignorance claims and provides factual information to the public; however, journalists have been found to frequently utilize ignorance claims. Journalists may frame conversations in a way that avoids asserting what the science means in order to “protect” the public and their own reputations as “responsible professionals” (Stocking and Holstein 1993). Journalists will consult outside scientists about the findings and reports of other

scientists to gain different perspectives on the value and implications of findings; however, this is primarily done with controversial topics, and can lead to the publication of ignorance claims. It is this claim of a need to promote balance that brings them to include unscientific points of view. This creates an imbalance of in media coverage of controversial topics such as the fluoridation debate. The “politicization of ignorance” through mass media coverage of movements can increase as activity of the leaders increases –increase in media leads to more public opposition (Stocking and Holstein 1993 and Mazur 1978). Stories are made out of those opposing science, attempting to instill fear, or doubting what has otherwise been proven as consensus. Media tends to favor what makes a good story, not necessarily reflecting the truth or what the scientific consensus is within the debate, leaving gaps in what information is provided to the public.

Drawing from this theoretical framework, this study examines the role of state oral health coalitions in current fluoridation policy contests in the United States. These coalitions play a crucial role in the conversations around oral health within their states, but what is the extent of their role in reference to community water fluoridation? What is the extent of fluoride opposition present in different states throughout the country? How does opposition gain traction and support? The goal of this project was to gather data on the activities and tactics of state oral health coalitions and their local fluoridation opposition. The information from this study will provide an update to historical analyses of fluoridation battles, and will give insight to the importance of state oral health coalitions as agents of public health promotion in the face of the social construction of ignorance.

III. Methods

A survey was distributed to forty-three state oral health coalitions throughout the country United States in order to collect the information needed for this project. The forty-three contacts came from the American Network of Oral Health Coalitions' (ANOHC) list of member coalitions (ANOHC 2015). ANOHC partners with the Association of State and Territorial Dental Directors (ASTDD), the Children' Dental Health Project (CDHP, Oral Health America, and the Campaign for Dental Health. Member coalitions are statewide oral health coalitions with the purpose of promoting oral health through education, prevention and policy.

The survey was distributed to the main points of contact for ANOHC member coalitions. Two follow up emails were sent, and follow up phone calls were made to remaining non-respondents. The survey was distributed by email through Survey Monkey, including open-ended and close-ended questions. The survey was divided into three parts: Background, Pro-Fluoridation Structure and Tactics, and Anti-Fluoridation Structure and Tactics. The background served to gather more information about the pro-fluoride coalitions and the states they serve, including the main point of contact, founding year, steering committee, and state and local policies regarding community water fluoridation. The pro-fluoride section was aimed at gathering information on the specific tactics and structures coalitions have utilized, and their level of activity. The pro-fluoridation and anti-fluoridation sections had a few similar questions to gather information on the opposing sides: what year activity began, what media platforms and strategies are used for advocacy, and how much activity there is around the debate. In addition, I requested examples of policy contests in communities within the states that faced fluoride challenges,

organizational tactics, and information on anti-fluoride groups. To supplement survey data, information was collected from government reports, Google searches, local news outlets, subject matter experts, materials available on coalition websites, opposition group websites, and social media.

My own involvement as the Fluoridation Coordinator for the Better Oral Health for Massachusetts Coalition provided additional data and insight for the study. During the past year in this position, I have worked with fifteen Massachusetts communities in order to maintain fluoridation in the face opposition, or begin community-wide discussions around fluoridating public water supplies. I have observed events and meetings, retrieved documents, reviewed studies, worked at polls, organized educational forums, attended state and national forums, and interacted with subject matter experts.

IV. Results

A total of 19 of the 43 coalitions contacted responded to the survey, for a 47% response rate. The majority of respondents were states in the Northeast, Midwest, and Southern regions of the country. Of the 19 respondents, 8 coalitions were founded from 2000-2004, and 11 were founded from 2006-2015. The development of many of these coalitions followed outreach from the Centers for Disease Control and Prevention (CDC) in the early 2000s to engage states without oral health plans in the creation of five-year plans. The composition of coalition boards and leadership reflect a range of professional backgrounds and organizational membership of affiliates with dental professions most prominent. Coalition chairs range from dentists and leaders of public health non-profits, to dental assistants and primary care employees. Boards include all dental professions such as

dentists, hygienists and dental assistants, as well as state dental associations, state departments of public health, state offices of corporations such as DentaQuest, university educators, community health centers and public health nonprofits.

Coalition	Year Founded
Rhode Island Oral Health Commission	2000
Arkansas Oral Health Coalition	2000
Alaska Dental Action Coalition	2003
Oral Health Colorado	2003
South Dakota Oral Health Coalition	2003
Oklahoma Oral Health Coalition	2003
Michigan Oral Health Coalition	2003
Texas Oral Health Coalition, Inc.	2004
Missouri Coalition for Oral Health	2006
Oregon Oral Health Coalition	2006
Mississippi Oral Health Community Alliance	2007
Georgia Oral Health Coalition	2008
Better Oral Health for Massachusetts Coalition	2008
Connecticut Coalition on Oral Health	2008
Vermont Oral Health Coalition	2010
Virginia Oral Health Coalition	2010
Iowans for Oral Health	2011
West Virginia Oral Health Coalition	2011
New Mexico Oral Health Coalition	2015

Pro-Fluoride Tactics: Reactivity

Of coalitions who responded, 89% have faced recent attempts within their states to remove fluoride from public water supplies, most within the past 1-3 months. All are involved in community water fluoridation efforts, with 53% actively involved. Numerous coalitions' mission statements and policy agendas include the promotion and protection of community water fluoridation; however, the majority of respondents wrote about their coalitions' fluoridation advocacy increasing in response to opposition activity within their

states. Only two of the nineteen respondents have not been aware of any recent attempts to remove fluoride from public water supplies.

Public health is not a field of abundant resources. The majority of oral health coalitions have limited resources they utilize for specific purposes, often with scopes of work to fulfill from funders such as foundations or departments of public health, and oral health plans with goals to meet within limited time frames. Despite competing interests, half of respondent coalitions have a part-time employee, full-time employee, or volunteer workgroup dedicated to community water fluoridation. The majority of oral health coalitions became involved in pro-fluoride efforts between 2010 and 2013 – in some cases, significantly later than their founding. For example, the Connecticut Coalition for Oral Health, founded in 2008, increased activity around fluoridation in 2013 and again in 2015 in response to proposed legislation on the state level to remove the statewide mandate for fluoridation in communities greater than 20,000 people. The New Mexico Oral Health Coalition is housed within the New Mexico Office of Oral Health, Public Health Division. Though officially founded in 2015, the collaborative group has been active in fluoridation advocacy since discovering the Albuquerque Water Authority stopped fluoridating without the consent of the Authority's Board in 2013. Their advocacy continued in 2014 when the city of Santa Fe began hearings on the continuation of fluoridation. Similar patterns of organized fluoridation support as a reaction to fluoride opposition can be seen in other states. The West Virginia Oral Health Coalition credits attacks to fluoridation on the local level, stemming from FAN as the push to be more active in fluoride promotion. Rollback attempts in Austin and Dallas, two of Texas' biggest cities, led the Texas Oral Health Coalition to seek support from national organizations to better organize fluoridation

support efforts. Oral Health Colorado, Iowans for Oral Health, and the Better Oral Health for Massachusetts Coalition reported active organization of pro-fluoride efforts in response to fluoride opposition activities in communities throughout their states.

The majority of pro-fluoridation efforts are reactive, responding to an increase in opposition in communities. To counter the distribution of literature by fluoride oppositionists, coalitions provide and utilize educational materials on community water fluoridation to educate the public on the science and importance of the public health measure. In addition to materials provided by trusted resources such as the CDC, almost half of coalitions create their own materials and 83% include links to information on community water fluoridation on their websites. A reactive tactic utilized by numerous coalitions is the development of a rapid responders list. Rapid responders lists are an efficient way to disperse notices of fluoridation opposition movement to stakeholders who are interested in protecting community water fluoridation. Having a rapid responders list allows coalitions to inform responders in those areas of what action they can take in response to fluoridation opposition. Actions can include attending a local government meeting, an event, or writing letters to the editor. Of the coalitions, 22% have rapid responders lists that are used as necessary. Another quarter of respondents have attempted to build a list but it is not used often, or they have considered building one.

Pro-Fluoride Tactics: Proactivity

Though most activity of state oral health coalitions is reactive, there are proactive activities occurring. Coalitions have initiated fluoridation activity to promote and further the practice within their states. The Mississippi Oral Health Community Alliance began soliciting water systems serving populations of 2,000 or more to utilize state grant funding for the purpose

of implementing fluoridation. The Alaska Dental Action Coalition actively promotes community water fluoridation due to the “well established evidence” showing its ability to reduce dental decay. The Vermont Oral Health Coalition has been led to support fluoridation because of the “noted benefit.” Both the Virginia and Oregon Oral Health Coalitions support it because of the public health benefit, particularly for vulnerable populations. A third of the coalitions hold community water fluoridation related events such as trainings or informational sessions. Some examples of events include a workshop related to community water fluoridation hosted by the Connecticut Coalition on Oral Health, continuing education sessions for dental and allied health professionals held by the West Virginia Oral Health Coalition, and a statewide training on fluoridation communication and advocacy by Oral Health Colorado. The Vermont Oral Health Coalition remarked in the survey that it hopes to be more proactive moving forward.

Advocacy is often shaped by regulatory standards of the states in which coalitions operate. The power to make decisions about community water fluoridation resides with different state and local powers throughout the country. In Massachusetts, Arkansas, New Mexico, South Dakota and West Virginia state laws require permission from the state to remove fluoride from community water supplies. Boards of health have the power make decisions on fluoridation in South Dakota, West Virginia and Massachusetts. In all other states, boards of health have no power in making decisions around fluoridation or do not exist. The ability for boards of health to exist and make decisions on fluoridation provides a trusted body to advise communities on the science and health benefits/risks of different decisions. Without a board of health, there is no guarantee that people educated in health sciences will be advising decision makers or the general public.

A number of state oral health coalitions work closely with the state departments of public health (DPH). In Massachusetts the Better Oral Health for Massachusetts Coalition collaborates directly with the MA DPH's Office of Oral Health to monitor fluoride activity throughout the state, and find funding for organized efforts. Other states, such as Alaska, Connecticut, Georgia, South Dakota, and New Mexico, have coalitions based out of the state DPHs. Oral Health Colorado is a part of a three organization community water fluoridation rapid response team, including the coalition, the state dental association, and the state public health department. The statewide DPH in these states serves as an organizing body, leading the efforts of the state and state oral health coalition.

Anti-Fluoride Agents

Out of the respondents, 13 indicated some level of connection between anti-fluoride activists in their state and FAN, while the remaining coalitions did not know. These connections include 9 groups that are direct FAN affiliates, and 4 others who utilize FAN materials. Fluoridation opposition efforts are primarily reactive by nature of the fact that they are a reaction to the scientific consensus that community water fluoridation at optimal levels is safe and effective in preventing tooth decay. As the leading national fluoride opposition group, FAN is connected to a significant number of opposition groups seen throughout the country. Fluoride opposition is being seen from a range of concerned individuals who have come across misinformation, to local and state departments such as water authorities, to organized groups of residents.

The origin of anti-fluoridation activity varies widely throughout the states, as reported by state oral health coalitions. The earliest reported year was 1960, and the most recent 2013. Anti-fluoride organizers have focused on local-level measures. Coalition

responses indicate that 74% of states see fluoride opposition at city or town meetings. Slightly less utilized than city and town wide meetings, 42% of coalitions do see fluoridation opposition efforts at board of health meetings; however, not all states have local boards of health that could discuss the merit of the issue before presenting it to cities and towns. Ballot questions came up in 37% of states in the survey – the same amount of local petitions seen. Efforts do not stop there – fluoride opposition has been seen in 26% of states in the form of mailings and picketing. The issue has been presented to local water utility districts, local water utility commissions, school councils, and state legislatures. They utilize a variety of grassroots tactics to further their side of the debate.

Anti-fluoridationists have directly targeted coalition staff and members, health departments, dental insurance agencies, and state dental associations. Coalition members have been directly confronted by anti-fluoridationists in person and by email. Health departments and insurance agencies have received complaints and Freedom of Information Act requests. Others noted responses on social media including direct messages in response to pro-fluoride comments on posts or blogs. One coalition noted that member dentists were targeted with threats to their licenses.

Individuals and groups on both sides of the fluoridation debate utilize a number of different media platforms to proactively construct the conversation around the topic. Opponents of fluoridation prominently use social media. Of respondent coalitions, 74% reported social media as a platform utilized by anti-fluoridation groups, while 67% reported pro-fluoride social media activity. Following social media, the second most utilized media platform is local news sources. Pro-fluoridationists are active in numerous media outlets, including social media, local news sources, local television and state news.

Social media and local news sources were tied as the most utilized platforms for pro-fluoridation activity. Local news sources are largely utilized through letters to the editor. When asked what the coalitions have done to directly respond to fluoridation opposition in local media, many responded with letters to the editor. In addition, media actions included writing newspaper articles, posting responses on social media and coalition websites, and flyers spread around communities.

Case Studies

These case studies illuminate the unique circumstances that must be accounted for in every state and community when acting on and reacting to the fluoridation debate. Three areas were selected to represent state coalitions facing three different fluoride debates: a fluoridation ballot victory, a fluoridation ballot failure, and a challenge to a statewide mandate. Though similar tactics were utilized to advocate for fluoridation, the different circumstances of each state resulted in unique debates and results.

Gloucester, Massachusetts

In 2014 and 2015 approximately eleven Massachusetts communities saw fluoridation challenges sparked by a small groups of residents. The leading pro-fluoride organization, the Better Oral Health for Massachusetts Coalition (BOHMAC), works with subject matter experts, local dental and medical professionals and community champions to ensure a pro-fluoridation presence at town, city council and board of health meetings. The coalition has been present at important events and discussions such as the Rural Health Conference, Massachusetts Public Health Association Annual Meeting, and the Yankee Dental Congress. Alongside boards of health, BOHMAC has organized educational forums and community-wide grassroots advocacy presenting the issue as one of public health and social justice for

the most vulnerable in the population. In addition to organizing activity, the coalition hosts numerous meetings and trainings that educate a wide audience including medical, dental, and public health professionals, students, community champions, boards of health, and regional departments of public health and environmental protection. Through these efforts they have created a network of stakeholders from a number of different fields throughout the state that are willing to respond to and spread the word about fluoride-related events and meetings.

In 2014, a group of citizens within the city of Gloucester challenged the city's longstanding practice of fluoridating the public water supply with a 2015 ballot measure. The discussion began at a city council meeting, and quickly escalated to a public referendum. The anti-fluoridation group was connected with the national FAN group, calling themselves Cape Ann Fluoride Action Network (Cape FAN). After failing in neighboring communities, the anti-group was driven to utilize all remaining resources to end fluoridation within Gloucester. The same fluoridation opposition literature has been utilized uniformly throughout Massachusetts; studies used include an article in the *Lancet Neurology*, Harvard IQ Studies, neurotoxicity studies, claims about fluorosis, cancer, and a report by the National Research Council. Proponents of fluoridation challenged this literature due research being conducted improperly, and invalid claims of causal relationships.

BOHMAC took an approach similar to the one it had in those same neighboring communities, working closely with the board of health and health director. A year after holding a community water fluoridation training session in Gloucester, there were connections with local rapid responders who adamantly sent letters to the editor in

response to anti letters, and placed lawn signs on their front lawns. BOHMAC spearheaded the organization of an educational panel on fluoridation, hosted by the Gloucester Board of Health. On the panel for the evening sat a subject matter expert (a dentist), the BOHMAC chairman (a dentist), a geriatric doctor, an orthodontist, and a pediatrician. The panel was live-broadcasted on the local television station and replayed repeatedly over the weeks leading up to the election. The panel was well attended with over one hundred people. The panelists answered every question submitted by audience members, and allowed additional pro-fluoride comments to be made by notable locals, including the water operator.

The BOHMAC panel led to a great deal of criticism from antis who felt all the presented information was biased to the pro-fluoride side. In response, Cape FAN organized their own educational panel on fluoridation and continued to send letters to the editor. The voter turnout for the election was high as there was much at stake – on top of fluoridation, it was also a mayoral election year. The organized efforts of pro-fluoridation activism clear support for fluoridation with 65% of voters supporting the continuation of fluoridation. The collaboration of the Better Oral Health for Massachusetts Coalition and the Gloucester Health Department garnered support from locals and provided sufficient information to the public to win the election.

Connecticut

The Connecticut Coalition on Oral Health was founded in 2008 by the oral health and dental organizations in the state. The coalition has been actively involved in pro-fluoridation efforts since its founding, utilizing a number of different tactics to educate the public. In 1965, fluoridation became a requirement for public water supplies serving

20,000 or more people (CTDPH 2009). In 2013, legislation was proposed to remove the statute requiring the fluoridation of community water supplies serving populations over 20,000 people. The Connecticut Coalition on Oral Health, though active in advocating and educating residents on fluoridation since its founding in 2008, became increasingly active in the debate in 2013 and 2015 in response to the legislation.

In 2013, Connecticut State Senator Joe Markley began working with the anti-fluoridation group, Connecticut Families Against Chemical Trespass (ConnFACT). The group's activities were primarily social media and website based. Senator Markley brought the issue in front of the legislature and gained traction in the local news. He framed his concern as one of municipalities' independent ability to make decisions on whether or not to fluoridate. He hosted an informational hearing, listening to dentists who supported it, and citizens who were opposed. Afterward he stated, "I thought it raised legitimate questions about the efficacy of it and the safety of it" (McQuaid 2013).

In an effort to reduce attention to Senator Markley's fight against fluoridation, the Connecticut Coalition on Oral Health refused to attend his hearing. Independently, they sent statements to the legislator and to the local media making clear their unwavering support. In 2013 the bill was referred to the Joint Committee on Public Health, and received no further traction. In 2015, the bill was again introduced by Senator Elizabeth Bye, and has been referred to the Joint Committee on Public Health. The Connecticut Coalition on Oral Health hosted a workshop related to community water fluoridation in the fall of 2015, and have an established volunteer workgroup focusing on the issue. With the close introduction of similar anti-fluoride bills, the CT Coalition on Oral Health is closely monitoring the situation and actively involving itself in the promotion and protection of

fluoridation. This mandate has been in place for such a long time, it is not gaining immediate controversy the way fluoridation has in other communities. The strong support of the coalition and dentists throughout the state has reinforced the scientific support.

San Marcos, Texas

The Texas Oral Health Coalition has been involved with fluoridation since its founding in 2004. With anti-fluoridation efforts in Austin and Dallas in 2013, the coalition reached out to national groups such as the CDHP, American Academy of Pediatrics, PEW, and the CDC to gain assistance. This led to stronger pro-fluoridation organization effort, organized by the coalition. The organization of pro-fluoride activity resulted in the continuation of fluoride in both Austin and Dallas. Despite these growing successful organizing efforts, on November 3rd, 2015, the residents of San Marcos, Texas voted to remove fluoridation from the community water supply with 61% of the vote. The city is one of the first Texan communities to cease supplementing fluoride in the public water supply.

The anti-fluoridation group, Communities for Thriving Water – Fluoride-Free San Marcos (CFTW) was responsible for the petition that led to the ballot measure in the 2015 election. With approximately 80 activists working toward the removal of fluoride, the group gained support from city councilors. The Citizens Utility Advisory Board, an official board of the city charged with management of public utility systems, made a recommendation to the City Council that fluoridation be continued. Despite this recommendation, city councilors against fluoridation called for an expert panel. The TX Oral Health Coalition responded with experts for their panel; however, no opposition experts were presented. While awaiting an expert, anti-fluoridation activists gained sufficient signatures to file a petition. The city also was, however, visited by Paul Connett,

the executive director of FAN. Connett met directly with politicians, including the mayor and councilmembers, discussing the health risks of fluoride.

The TX Oral Health Coalition reported in the survey that CFTW paid people \$2/signature to go into different neighborhoods and gather signatures, particularly focusing on communities of low socioeconomic status. The filing of the petition made an expert panel irrelevant, but it was completed incorrectly, and led to a lawsuit against CFTW on behalf of the City of San Marcos. A district judge intervened, stating the issue had to be allowed on the ballot. CFTW targeted students at the local university to get out and vote on the issue. In 2014, the Student Government Association of Texas State University passed a bill calling for the end of fluoridated water at the University. CFTW helped register students to vote while distributing their literature and misinformation, and stood outside of polling places on the day of the vote to encourage their position.

Opposition to fluoridation is now written into the City Charter, ensuring that future city councils will not be able to re-implement it without a referendum. The result of the vote is more wide spread than San Marcos alone – the San Marcos municipal water is supplied to a number of local communities. The success of anti efforts in San Marcos has provided a model for other college towns with organized fluoride opposition efforts. Though Austin and Dallas have maintained it, the loss of fluoridation in San Marcos is a hit to Texan pro-fluoride organizers.

V. Discussion

The results of this survey reflect the active organization of agents on both sides of the fluoridation debate. State oral health coalitions have largely been left out of the conversation about community water fluoridation in its 70-year history, which can be

predominately credited to the formation of many coalitions following the year 2000.

Coalitions are important agents in the debate, facilitating evidence-based conversations on a local and state level. Their capacity to react to fluoride opposition surpasses the capabilities of larger organizations to understand and meet the needs of communities regarding what they need to be educated on to understand and feel confident in this public health measure.

Community water fluoridation, despite scientific and medical consensus, is on the receiving end of a great deal of controversy. The construction of doubt has pervaded public perception on a number of important public health issues, from the dangers of tobacco to the reality of climate change. Proponents of community water fluoridation have a concise message: it is a safe, cost-effective way to provide preventive oral health care to the entire population. They are careful to frame the conversation in a way that omits the use of words like “chemical” that may unintentionally affirm people’s previously held beliefs that there is something to be concerned about, avoiding contributing to “confusion or fear” (Campaign for Dental Health 2014). It appears that fluoridation will remain a topic of conversation and a difficult choice for many due to “competing values and tradeoffs” (Olson 2008). Some have argued that fluoridation is an example of the “inappropriateness of direct citizen involvement with policy-making” (Martin 1989).

Agents on both sides of the fluoride debate deploy research findings in support of their positions (Freeze and Lehr 2009). Agents of pro-fluoridation cite research reinforcing the positive impact of community water fluoridation on oral health, particularly emphasizing reduced childhood tooth decay. Those on the opposing side of the debate criticize science utilized by fluoride supporters, arguing that it merely conforms to

institutionalized beliefs (Freeze and Lehr 2009). By labeling scientific evidence with the term “junk,” those opposed to various public health policies have fueled controversy despite scientific consensus. Victims of “junk science” labeling include vaccinations, climate change and tobacco. The term “junk science” has become a “convenient scapegoat for deeper law-science conflicts because it plays on public fears of science and technology being out of control” (Edmond and Mercer 1998). On the other side of the argument, it seems the pro-fluoridation camp tends to label anti-fluoride arguments “junk science” more so than the other way around (Freeze and Lehr 2009).

Impossible, endless debates ensue upon the accusation of the other side’s lack of credibility. The term “sound science” has become well used alongside “junk science.” While it appears logical, it has been utilized as a tool to perpetuate doubt. The call for sound science implies a need for complete certainty despite the continuous research and improvement of scientific knowledge. Scientific discoveries are not perfect – there is always more to be learned about any topic, but unreasonable doubt can limit the positive impact of current scientific discoveries. Dr. Johnny Johnson, DMD, President of the American Fluoridation Society stated that “science speaks for itself;” however, conspiracy theories and misinformation are pervading public perception, making people hesitant to trust science because doubt has been constructed around it (Dr.Bicuspid 2016). The widespread reach of misinformation has led states and communities to debates that impact the oral health and therefore overall health of residents of all ages, races and socioeconomic statuses.

The media coverage of both sides of the debate brings attention to ignorance claims, giving coverage to misinformation. In the effort to provide a balance in the media, both pro

and anti arguments are given coverage; however, they are covered without asserting any scientific fact. Media coverage of meetings, panels, and votes bring up the arguments of both sides, making them appear equally legitimate – up for the reader to decide. In addition, local news sources provide platforms for arguments with letters to the editor. The lack of clear information on where the peer-reviewed, credible science is in media coverage hurts the public's perception of the facts around fluoridation.

Fluoridation opposition groups, though appearing in states at the grassroots level, frequently are connected to the national FAN organization, relying on their assistance and resources. As a nationwide servicer of fluoride opposition, FAN serves as a predominant agent of the construction of ignorance around fluoridation. FAN utilized the lead-contaminated water in Flint, Michigan as a vehicle to relay their arguments. They reiterated language used to discuss the lead-contamination such as “hazardous waste” and “poison” (Connett 2016). FAN cited the addition of fluoride to water supplies with “contributing to unsafe lead exposures in children,” referring to “several lines of evidence” that have no citations (Connett 2016).

Another claim they perpetuate is the connection between fluoride and IQ, arguing that fluoride reduces IQ – an argument that has been disputed and researched many times over. To cover criticism of fluoride supporters, FAN states that it has been “correctly pointed out” that a number of studies on the fluoride-IQ connection have not adequately controlled for all contributing factors – but they state this is not overly relevant. Though not all factors were controlled, they claim it is “unlikely” that other factors could contribute to the findings of reduced IQ – without evidence. By asserting connections and likelihoods

without well-designed, peer-reviewed research to reinforce them, FAN is constructing ignorance in people who find their way to their active website and social media outlets.

FAN skews facts and science in a way that promotes their interests, while not always maintaining the reality. They boast on their homepage that 204 communities have rejected fluoride since 2010; however, this number includes communities from all over the world that have ceased fluoridation for a number of different reasons. An example of this is Amesbury, Massachusetts, which stopped fluoridating due to problems with the water treatment system. Another example is South Burnett, Australia, which stopped fluoridating because the majority of citizens did not drink from the public water supply due to its poor taste, rather than due to fluoridation opposition.

The results of this survey reinforced findings in previous literature regarding the high levels of social media activity seen from the fluoride opposition. The majority of internet traffic related to fluoridation occurs on opposition websites, Facebook pages, Twitter accounts and YouTube pages, receiving 5-60 times more traffic than pro-fluoride sources, though leading pro-fluoride resources such as the American Dental Association and the U.S. Centers for Disease Control and Prevention (CDC) have a significant internet presence (Allukian 2014). Responses showed greater utilization of social media by fluoride opposition than fluoride support as it provides an easy platform for false claims against water fluoridation to perpetuate – the internet is a “fluid environment” where people are able to create, curate, and converse, providing an open space for dialogue to occur (Seymour 2015). The literature on agnotology presents the role of media coverage in constructing ignorance, but does not address the role of social media. This paper provides information on the high levels of use of social media in constructing ignorance and doubt.

VI. Conclusions

There were limitations to this study. First and foremost, there was not a 100% response rate. Though the 47% response rate received provided great information, it is likely that the majority coalitions that responded did so because they have experienced fluoride debates. Greater participation in the survey would have strengthened the conclusions on the pro- and anti-fluoridation activities throughout the country. The survey itself, though covering all topics that needed to be covered, would have benefitted from asking for more specifics. Further studies could look more into the materials provided by each side of the debate, including flyers and brochures, mailings and letters to the editor.

Mechanisms of institutionalization influenced the roles of state and local governments in both facilitating and constraining advocacy around community water fluoridation. Pro-fluoridationists have been afforded credibility due to the science that supports them. Well-respected organizations such as the CDC, American Cancer Society, and the American Academy of Pediatrics give legitimacy to the argument. Anti-fluoridationists push for credibility by gaining media coverage and calling for policymakers to offer personal consultations (Meyer 2008). These conversations provide opportunities for misinformation to be spread to policymakers, and gain support from politicians or candidates eager to gain the approval of anti-fluoridationists. Fluoridation was facilitated by government mechanisms for permanent consultation, such as the presence of boards of health and offices of oral health in some state departments of public health (Meyer 2008). They serve as vital allies in the support of fluoridation, enforcing requirements that decisions to stop

fluoridation receive state government approval and even providing state oral health coalitions with state funding.

On the other hand, pro-fluoride tactics were constrained in some cases by state government involvement. The utilization of state funds comes with a slew of restrictions and regulations. Some coalitions are based in the state departments of oral health, making them the responsibility of people who already have full time jobs, perhaps do not have direct experience with the field of oral health, and who have competing interests. It makes it difficult to mobilize with the limited resources in state governments. Another constraining factor is the government mechanism of institutionalization giving coalitions platforms or venues to make their claims (Meyer 2008). By allowing them to introduce the topic to city councils, boards of selectmen, subcommittee, and other government platforms, these agents of fluoride opposition are handed opportunities to construct doubt and perpetuate misinformation.

The medical and dental health community's consensus resides in confidence of community water fluoridation's positive impact on reducing tooth decay in a cost-effective, equitable way. State oral health coalitions are crucial agents of fluoride support that continue to educate the country on fluoridation's benefits in the face of opposition, ignorance and misinformation. Media influence, social media access, and the presence of misinformation and junk science saturates the information accessible online. The construction of ignorance by fluoride opposition has created a difficult state for fluoride supporters, creating a need for state oral health coalition action in support of fluoride. Coalitions organize support and educate cities and towns, leading people to make decisions that are beneficial for themselves and their communities. Whether on a proactive or

reactive level, the actions of state oral health coalitions contribute valuable efforts in the changing social environment of today's society.

VII. BIBLIOGRAPHY

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VIII. APPENDIX

Appendix A – Survey

Hello,

My name is Victoria Chase. This questionnaire is for a research paper I am doing for my Commonwealth Honors Program thesis at Salem State University. It will ask you questions about activity around community water fluoridation in your state.

Filling it out is completely voluntary. There are no right or wrong answers. You may stop at any time. You do not have to answer any questions that make feel uncomfortable. When you are done, please submit your questionnaire. There are no expected risks. The benefit of this study is that it will shed light on the debate over community water fluoridation nationwide, which will better inform the future activities of state oral health coalitions.

An analysis of the results and an explanation of the study will be available in the Salem State Honors Program online thesis database. I will send you a copy of the finished report.

Because this research is based on the activities of oral health coalitions, we cannot guarantee anonymity of your responses; however, your name will not be used in reports or presentations of the findings of this research. The information provided to the researchers will be kept confidential with the exception of information which must be reported under Massachusetts and Federal law such as cases of child or elder abuse. The identity of your coalition will be disclosed in the material that is published and presented; however, you will be given the opportunity to review and approve any material that is published about your coalition.

This research project has been approved by the Institutional Review Board at Salem State University. Thank you for your help.

Sincerely,

Victoria Chase

[] I agree to participate in the research conducted by Victoria Chase of Salem State University under the conditions outlined in this form.

For questions or concerns about the research, please contact Victoria Chase, researcher, at v_chase1@salemstate.edu, or faculty sponsor Jennifer Jackman, Associate Professor of Political Science, at jjackman@salemstate.edu.

For concerns about your treatment as a research participant, please contact:

Institutional Review Board (IRB)

Sponsored Programs and Research Administration
Salem State University

352 Lafayette Street
Salem, MA 01970
(978) 542-7556 or (978) 542-7177 or irb@salemstate.edu

This research project has been reviewed by the Institutional Review Board at Salem State University in accordance with the US Department of Health and Human Services Office of Human Research Protections 45 CFR part 46 and does not constitute approval by the host institution.

The Fight Over Fluoridation: Activities of State Oral Health Coalitions & Their Opponents

Background on Coalition

Please enter the following contact information:

Coalition Name:

Address:

Main Contact:

Email:

Phone Number:

What year was your coalition founded?

Which organizations are represented on your board/steering committee?

Who serves as chair, and what organization do they represent?

Does your state law require permission from the state to remove fluoride from community water supplies?

Do boards of health in your state have the power to make decisions regarding community water fluoridation?

Pro-Fluoridation

Has your coalition made the decision to vocally support community water fluoridation?

To what extent is your coalition involved in community water fluoridation efforts?

- Not involved at all
- Monitor the situation
- Have materials ready to distribute when requested
- Will periodically take pro-fluoride action
- Actively involved in pro-fluoridation work

What year did your coalition become active in pro-fluoridation efforts?

What led you to start pro-fluoride work?

What platforms
have you
seen/contributed

pro-fluoride activity on?

- Ballot Questions
- Mailings
- Social Media
- Local News Sources
- State News Sources
- Local Television
- Local Petitions
- Local Magazines
- Youtube Videos
- Picketing
- City/Town Meeting Topics
- Board of Health Discussions
- Other (Please Elaborate)

Does your coalition have a “Rapid Responders” list, or other urgent contact list to help respond to anti-fluoridation activity that appears throughout the state?

- We do not have a Rapid Responders list
- We have attempted to build one, but it is not used often
- We have considered building one
- We have one that we use when necessary

Does your coalition host events, trainings, and/or informational sessions on community water fluoridation?

- No, we do not hold any community water fluoridation related events
- Yes, when necessary we will hold an event
- Yes, we regularly hold community water fluoridation events

If yes, please list the kinds of community water fluoridation related events that you hold:

--

Do you have an employee and/or workgroup dedicated to community water fluoridation? Select all that apply.

- Part Time Employee
- Full Time Employee
- Volunteer Workgroup
- None

Does your coalition produce materials with information on community water fluoridation for distribution to the public?

- We do not distribute material on community water fluoridation
- We use materials created by our state department of public health
- We use materials created by the CDC, ADA, or other national organizations
- We make materials for distribution and use information we have found online

Does your website include links to information on community water fluoridation?

- Yes
- No

What websites do you reference and recommend when looking for credible information on community water fluoridation?

Please add any additional information about pro-fluoridation activities within your state:

Anti-Fluoridation

Have there recently been attempts within your state to discontinue the fluoridation of public water supplies that you are aware of?

- Yes
- No

If yes, how frequent are such attempts?

- Every 1-3 months
- Every 6 months
- Once a year
- Every few years

If you have seen ballot questions in your state, have any recent votes resulted in the removal of fluoridation from community water supplies?

In what communities have you seen anti-fluoridation activity over the past 5 years?

Please give examples, if any, of how anti-fluoridation activity recently progressed within a few specific communities in your geographic area:

Name of Community _____

Description of activities:

Name of Community _____

Description of activities:

Name of Community _____

Description of activities:

If anti-fluoridation activists are active in your state, what year did they begin to organize their efforts?

Are there any groups in particular that are pushing anti-fluoridation activity?

- Yes
- No

If yes, what are they called?

Are these anti-fluoridation groups linked to a national group, such as Fluoride Action Network?

have you seen anti-fluoridation activity on?

- Ballot Questions
- Mailings

What platforms

- Social Media
- Local News Sources
- State News Sources
- Local Television
- Local Petitions
- Local Magazines
- Youtube Videos
- Picketing
- City/Town Meeting Topics
- Board of Health Discussions
- Other (Please Elaborate)

Has your coalition directly responded to any of these activities? If so, in what ways?

Has your coalition, or members of, been directly targeted by anti-fluoridationists?

Please elaborate on any anti-fluoride related activity you have seen or interacted with:

Would you be willing to answer any questions I may have about your responses, or provide additional materials if needed? Please check all that apply.

- Would be willing to have a phone conversation
- Will provide further information/materials upon request
- I do not wish to have further contact